Industrial Standardization

and Commercial Standards Monthly

In the flow of products from farm, forest, mine, and sea, through processing and fabricating plants, through markets, standards are the facilitators and integrators. They underlie mass production. They provide industry with the means to smooth out "bottlenecks" and dislocations.

Standards have a vital role in the present emergency.

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June 1940

STANDARDIZATION plays an important part in our peacetime economy. It is the keynote of the mass-production methods that have given this country its high standard of living. In times of disaster — hurricanes, floods, fires — it has helped us to rebuild vital services and set the wheels of factories in motion again. It makes for accuracy, flexibility, and speed in production.

Today standardization must play an even more vital role in placing our peacetime economy on a preparedness basis.

No one doubts that this country can turn out military equipment on the same scale that we today turn out bathtubs and radios. Full effectiveness of such a program, however, will depend largely on standards — standardization of design, standards for raw materials, for dimensions, for quality of component parts. Maker, buyer, and parts and materials manufacturer will need to get together on such problems as performance requirements, fits of parts, the quality of surface finishes, and specifications for materials.

Out of the country's experience with standards and the lack of standards during the World War the idea of a national standardizing agency was born.

For 20 years, industry and government have been using this agency to solve their peacetime technical problems. Today that same agency is ready to help gear the wheels of industry to whatever higher speeds are needed.

—Edmund A. Prentis, President
American Standards Association

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Industrial Standardization

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RUTH E. MASON, *Editor*

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Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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June, 1940 **Vol. 11, No. 6**

New Tap Standard Is Product Of Thirty Years of Work

by

Charles M. Pond[1]

Chairman, Technical Committee 12 on Taps, ASA Committee on Small Tools and Machine Tool Elements

PUBLICATION early this year of the American Standard for Cut and Ground Thread Taps (B5.4-1939) is the logical culmination of nearly 30 years of one of the most interesting developments in small tool history. As far back as 1910, the tap and die manufacturers realized that their product was anything but interchangeable. A number of manufacturers were furnishing the so-called "V" thread taps as a regular procedure and no two were working to the same pitch diameter figures. A great many sizes were listed by one producer which were not shown in his competitors' catalogs. Each tap maker was a law unto himself, although there was some uniformity as to styles of taps offered the trade.

In carrying out one of the early investigations into this situation each manufacturer sent in 50 hand taps from each of about 20 different sizes taken at random from his stock. These were carefully measured for lead error, and a comparative table was set up from which the first agreed-upon lead error tolerance was adopted. This result was not finally accomplished until 1923, and in the meantime the work had attracted sufficient interest to warrant publication in 1914 of the first Standard Catalog for Taps and Dies. This Standard Catalog was subscribed to by most of the leading tap manufacturers and its inauguration abolished hundreds of oversize taps such as the 32nd oversize and 64th oversize tools which

[1]Vice-president, Pratt & Whitney Division, Niles-Bement-Pond Company, West Hartford, Conn.

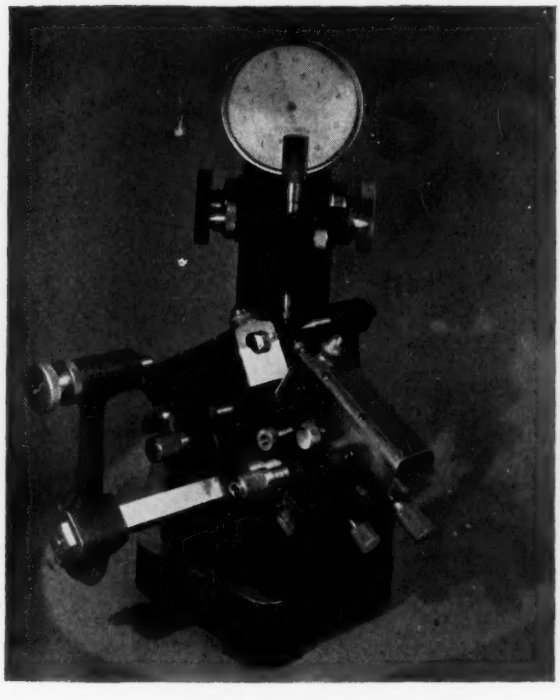


FIG. 1
This three-flute tap comparator helps keep tools up to modern requirements

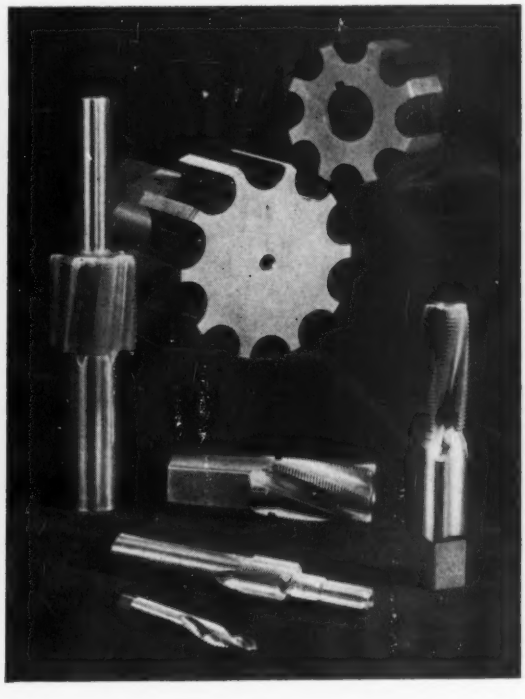


FIG. 2
A few of the varieties of taps manufacturers are called upon to furnish

in those days were known as the "rough iron" sizes.

Among the pioneers in this standardization work were such men as Francis G. Echols, F. O. Wells, Frank Smith, Mr. Snow and Mr. Carpenter. Working with the facilities then at their disposal and dealing entirely with cut thread taps, they succeeded in bringing a certain amount of order out of chaos and the result of their early efforts can still be traced in a great many of today's standards.

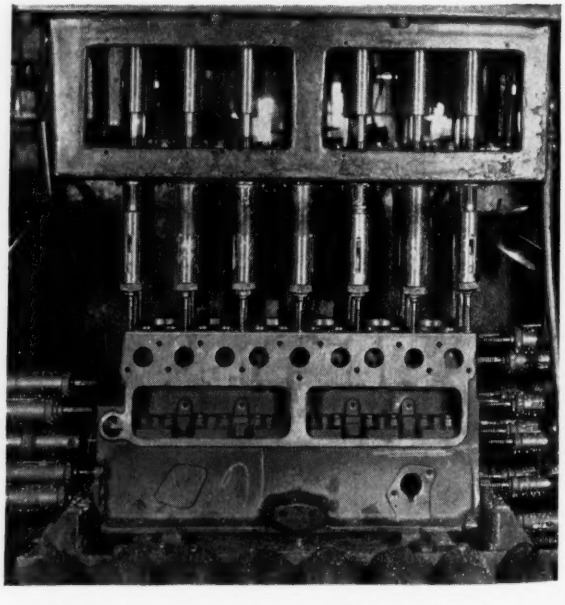
A standing committee was appointed to carry on this work and year by year this master catalog was amended and revised so that by the time Technical Committee No. 12 on Taps was organized by the ASA Committee on Small Tools and Machine Tool Elements, a workable foundation was laid, upon which this publication is based.

Probably no industry has been obliged to change more often and more rapidly to keep up with modern conditions than tap manufacturing. The organization of the National Screw Thread Commission, the introduction of ground thread taps, the rapid adoption of numerous alloys, and increasingly wide use of gages and gaging equipment have made almost annual changes imperative and the taps put out today bear very little resemblance to the tools of a generation ago.

Keeping pace with this development, we find the manufacturers of thread inspection equipment have brought their product to a state of perfection where minute errors are easily detected. Thread comparators and lead testing devices, (a representative example is shown in Figure 1) play an important part in keeping the tools in line with modern requirements.

A heavy percentage of the taps sold today are the hand taps. Although these were designed primarily for hand use, yet modern manufacturing methods have adapted the tapping equipment so that they are now used in multiple spindle tapping machines. The need for accurate standardization will be apparent in the picture below, which shows nearly 40 hand taps operating in a special fixture at the same time. The necessity of maintaining size and uniformity will be apparent.

Even though carefully worked out standards have been established, special taps still constitute about 60 per cent of the trade's requirements and



Multiple tapping machine showing nearly 40 hand taps operating at the same time

Small Tools Committee Works on Broad Program

A broad program of standardization on small tools and machine tool elements is being carried out by ASA committee B5. Work already completed includes standards on T-slots with their bolts, nuts, tongues, and cutters; tool holder shanks and tool post openings; milling cutters; rotating air cylinders and adapters; jig bushings; circular and dovetail forming tool blanks; chucks and chuck jaws and lathe spindle noses for turret lathes and automatic lathes; dimensions of splined shafts and splines; machine tapers; adjustable adapters for multiple spindle drilling heads; and the recently published revised standard on taps.

A great deal of work is still on the committee's schedule, including spindle noses and collets for machine tools; punch press tools; forming tools and holders; milling machine tables; twist drills; reamers; and several projects for terminology and definitions.

The work is carried out under the joint leadership of the American Society of Mechanical Engineers, the National Machine Tool Builders' Association, and the Society of Automotive Engineers.

Figure 2 shows only a few of the varieties which manufacturers are called upon to furnish.

With publication of the various classes of fit set up by the National Screw Thread Commission, tap makers were immediately called upon to make tools which would produce the class of fit adopted by individual customers. Owing to the large number of variables which enter into the tapping processes, however, the tap makers have never been able to guarantee the size of the fit, particularly in the smaller diameters and finer pitches. This condition has been generally recognized, and one of the subcommittees of the ASA small tools committee is now working on this problem with a view to establishing tolerances which the average user can reasonably expect to obtain with taps now on the market.

Will Need Future Revisions

Manufacturers of commercial nuts who have thousands of machines using the so-called bent shank tap have had a difficult problem in producing economically nuts of the correct size as there is bound to be a considerable variation due to this long-established method of tapping. This method consists of revolving a bent tap in a specially designed chuck, allowing the nuts to continuously ride up the shank and around the bend, and fall off into the hopper. This is illustrated in Figure 3 and it can be readily appreciated that the variables here introduced make extremely fine accuracy most difficult to obtain even with the best taps available.

The new American Standard contains comprehensive nomenclature and more than 40 pages of text and descriptive matter and yet there is not much question but that the next ten years will see still further refinements and changes which will doubtless require a comprehensive revision.

FIG. 3

Bent shank tap for making nuts

The nuts ride up the shank and fall off into the hopper. Close accuracy is difficult with this method

In closing, the writer would like to express his deep obligation to the members of the Tap and Die Division of the Metal Cutting Tool Institute who have contributed generously of their time and experience to make this program a success.

List of Sources of Information About Dry Cleaning Compiled

The National Bureau of Standards has published a list of sources of information on dry cleaning and related processes. The classifications into which the list is divided are: Dry Cleaning, Spotting and Wet Cleaning, Finishing, and Dyeing; Dry Cleaning Solvents and Soaps; Management; Safety; and Trade Journals.

Most of the books and articles listed may be consulted in the large libraries, according to the announcement by the National Bureau of Standards. Prices are given for those Government publications that are obtainable from the Superintendent of Documents, Government Printing Office. The list is in the form of a Letter Circular, designated as LC-583, and was prepared to answer inquiries about literature and other information on dry cleaning. It is available free of charge from the National Bureau of Standards, Washington, D. C.

Revised Canadian Specifications For Portland Cement Published

The Canadian Engineering Standards Association has just issued their third revision of Standard Specifications for Portland Cement. The standard also includes methods of testing, chemical analysis, and sampling. It is available from ASA at 75 cents.

Federal Specifications Issued

Notice has been received by the American Standards Association of the approval of the following specifications. The dates opposite the titles below show when each specification will become effective.

Aluminum-alloy; ingots. (superseding QQ-A-371) QQ-A-371a July 1, 1940

Bandages; gauze, compressed. Amendment-1 BBB-B-51 July 1, 1940

Bottles; prescription. Amendment-1 DD-B-591 July 1, 1940

Brushes, dust; radiator. Amendment-1 H-B-221 July 15, 1940

Brushes; mucilage and paste. Amendment-1 H-B-401 July 15, 1940

Brushes, scrubbing; hand, white-tampico. Amendment-3 H-B-551 July 1, 1940

Brushes; typewriter. Amendment-1 H-B-681 July 1, 1940

Bunting; cotton, mercerized. Amendment-2 CCC-B-791a July 1, 1940

Cable and wire; rubber-insulated, building-type, code-grade. (superseding J-C-101a) J-C-101b July 15, 1940

Cable and wire; rubber-insulated, building-type, heat-resistant grade (0 to 5,000-volt service). (superseding J-C-106) J-C-106a July 15, 1940

Cloth; photo-mounting. (new) DDD-C-431 June 15, 1940

Lamb. Amendment-1 PP-L-91 June 15, 1940

Machines; slicing, meat. (new) OO-M-81 June 15, 1940

Paint, red-lead-base; linseed-oil, ready-mixed. (new) TT-P-86 June 15, 1940

Pans, fry; corrosion-resisting-steel-clad (3-ply). Amendment-1 RR-P-86 July 1, 1940

Paste; linoleum. (new) O-P-106 July 1, 1940

Peas; canned. Amendment-4 JJJ-P-151 July 1, 1940

Pipe; steel and ferrous-alloy, wrought, iron-pipe-size. (superseding WW-P-403) WW-P-403a July 15, 1940

Prunes; evaporated (or dried). (superseding Z-P-681a) Z-P-681b July 1, 1940

Punches; bag, center, coopers', coppering, cutting, tinners', and drive-pin. Amendment-2 GGG-P-831 July 1, 1940

Raisins. (superseding Z-R-71) Z-R-71a July 1, 1940

Scoops, kitchen; corrosion-resisting-steel. Amendment-1 RR-S-131 July 1, 1940 (applicable to Navy Dept. purchases only.)

Soap; toilet, liquid. Amendment-2 P-S-618 June 1, 1940

Syringes; all-glass, Luer. (new) GG-S-921 July 1, 1940

Tape; paper, gummed (kraft). Amendment-2 UU-T-111 July 1, 1940

Varnish; mixing (for) aluminum paint. (superseding TT-V-81) TT-V-81a July 1, 1940

Watches; stop. Amendment-2 GG-W-111a July 1, 1940

Copies of specifications and amendments may be purchased at five cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C.

ASA Board Authorizes New Schedule of Dues

A new schedule of company-member dues, which simplifies the schedule as originally set up, has been authorized by the Board of Directors of the American Standards Association.

The new schedule, on the basis of gross receipts of total annual business in millions of dollars, is:

0 - 2	$50
2 - 5	50 - 100
5 - 10	100 - 200
10 - 20	200 - 300
20 - 33	300 - 500
33 - 50	500 - 700
50 - 67	750 - 1000
67 - 100	1000 - 1500
Over 100	Proportionally

For firms preferring to subscribe on the basis of capital, rather than gross receipts, the recommended basis shall be one and one-half cents per thousand dollars of aggregate market value of the corporate securities of the firm.

Membership in the American Standards Association gives a company the privilege of services from the ASA in proportion to the dues it pays. A specified number of copies of INDUSTRIAL STANDARDIZATION, free copies of new approved American Standards, information from the ASA Library, and 20 per cent discount on all approved American Standards are some of the specific services which are given by the ASA to Company Members. In addition to these specific services Company Membership helps to make available the general standardization committee work, the preparation and approval of standards which the American Standards Association could not carry on without the support of its Company Members and Member-Bodies.

Bureau of Standards Lists Publications on Building

A complete list of publications on building materials, building standards, and home building issued by the National Bureau of Standards has been prepared and is available as a mimeographed Letter Circular LC 592. Whenever a publication given in this list can be purchased from the Superintendent of Documents, Government Printing Office, the price is given. The list includes Commercial Standards, Simplified Practice Recommendations, Scientific Papers, Technologic Papers, Research Papers, Handbooks, Miscellaneous Publications, and Letter Circulars, as well as "Building and Housing" publications and "Building Materials and Structures" publications.

Standards In Our Social Order

by P. G. Agnew

Secretary, American Standards Association

The present national effort to coordinate our resources again brings to the fore the essential role of standardization.

In view of the importance of standards to any program of large-scale production, it seems important to review at this time the entire nature and meaning of Standardization in its relation not only to industry but also in its general implications to society as a whole.

The following article, which was prepared for the Encyclopaedia Britannica, is preprinted here by special permission.

—EDITOR.

STANDARDIZATION is the establishing, by authority, custom, or general consent, of a rule or model to be followed.

In its broadest sense, standardization applies not only to such matters as weights and measures and material objects, but it permeates most fields of human activity. Folk-ways, taboos, moral codes, ceremonies, religious rituals, educational procedures, social and business customs, industrial practices and law itself, are all forms of standardization.

Language is the most important example of standardization that man has brought about. Words are sounds whose meanings have become standardized and so form our principal means of communication.

The main use of the term standardization is, however, in connection with technology, industry, and business, their products and processes.

Kinds of Standards. Among the more important kinds of standards are those described below:

Standards of Measurement, such as the meter, kilogram, pound, and foot, are as necessary to our national economy as is the alphabet to literature. Some of these, like the cubit and shekel, are of great antiquity. To meet the needs of modern science and technology numerous standards of measurement have been set up in other fields, such as units of time measurement, temperature scales, electrical and magnetic measures, frequency (pitch of musical sounds), hardness, atomic weights, etc. Said Lord Kelvin, "When you can measure what you are speaking about, and express it in numbers, you know something about it." (*See* Measures and Weights; Standards, National Bureau of.)[1]

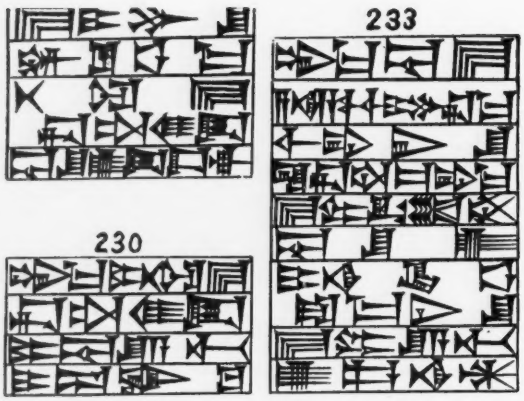
Money provides the measure of value. The stability of the monetary unit is of cardinal importance to the stability of the entire national economy of a country.

Standard Methods of Accounting have become essential to business management and to governmental bodies as well. Standard cost accounting systems, when adopted by a trade as a whole, make it possible to compare the efficiency of particular operations, and thus provide more effective managerial control than would otherwise be possible.

Standards for Office, Purchasing, and Operating Routines make possible effective administration of far-flung business enterprises.

Standards of Size and Shape provide for interchangeability of parts and supplies. They are essential to present-day large-scale production and to the use of modern manufacturing methods. Examples are bolts and nuts, ball bearings, railway car couplings, automobile tires, screws, and pipe thread. Systems of fits and gages make it possible to control the production of such articles with the necessary accuracy.

[1]References throughout this article are to other sections of the Encyclopaedia Britannica.



Symbols whose meanings have become standardized form our principal means of communication and record.

This cuneiform tablet has preserved for us not only the language but also the building code requirements of the City of Babylon. If a substandard house "falls in and kills the householder, the builder shall be slain," it reads.

Concentration upon the Optimum Number of Types, Sizes, and Grades of Manufacturers' Products is often referred to as "simplification," a word given it by Herbert Hoover who gave a great impetus to this kind of standardization.

Safety and Sanitation Standards for the protection of the public and of employees are frequently given the force of law through legislation or through regulations issued by administrative authorities. Examples are: standards for the purity of drugs contained in the national pharmacopeias; regulations to assure wholesomeness of food products such as meat and milk; building codes; standard signs and signals for the control of street and highway traffic; and industrial safety codes.

Specifications and Grading Rules are definitions of materials and products, the purpose of which is to convey the same meaning to buyer and seller. A specification for cement is an elaborate technical definition of just what kind of cement is called for, how a test sample shall be made, how it shall be tested, and what strength it shall have; so that a buyer can telegraph, "Send 100 barrels of cement meeting specification A" with confidence that he will get what he wants. Grading rules are specifications for two or more levels of quality, often of an elementary nature, defining different grades or series of the same class of products, as grade A and grade B milk.

Methods of Testing materials and manufactured products are used to determine whether they comply with the specifications upon which they are bought and sold.

Nomenclature includes definitions of words and terms used in buying and selling and in technical and trade literature, abbreviations, symbols.

In the last analysis, not only specifications but most other standards, except sizes, are essentially definitions. All buying and selling in which goods do not come under the actual eye of the buyer must necessarily be based upon some sort of standard. Most of such standards are unwritten, simple, and crude, often being no more than a two-party understanding, such as "Like the one I bought of you last time." At the other extreme, all of the great commodity markets are dependent upon standards which are, in most cases, well worked out, are nationally accepted and used, and may even be subject to legal definition. In the absence of such standards, the buyer would himself have to judge the wheat, corn, cotton or copper with his own eyes. A safety standard defines just what hazards shall be covered by the safety features of a machine, or by safe practices in an operation. In each case a standard enables buyer and seller, or the parties to any other undertaking with which the standard deals, to speak the same language.

Most standards come about through a more or less unconscious evolutionary process. Since the latter part of the 19th century there has, however, been a steadily increasing trend toward the development of industrial standards, through conscious, deliberative action.

Albert W. Whitney has compared the processes of research and standardization to the process of national selection. "Nature is perpetually creating new variations in plant and animal life. This is precisely analogous to the creative faculty in human thought. This process of nature, uncontrolled, would fill the world with endless variety. Natural selection, however, acting upon this variety, has had the effect not only of choosing certain types as worthy to survive, but of endowing these types with a certain degree of stability. This establishment of a system of discrete and enumerable types in nature is the exact analogue of standardization as a purposeful, human activity. Not only has nature developed types which can be enumerated and classified, but she has standardized for each a multitude of organs and functions. If this were not so, organized life would be practically impossible. Everything would be an individual problem with no possibility of generalizations. Institutions and customs would be impossible, for institutions and customs and laws depend upon an underlying sameness of reaction. There could be no organized education, because each mind would be an

educational problem by itself. An underlying sameness is the basis for every civilization."

The conscious process of standardization in industry was first applied to engineering matters, but has been extended to foods and other agricultural products, in fact to innumerable products of farm, forest, mine, and sea. It helps to channel these materials through the many stages of manufacture. It has been concerned predominantly with producer goods. By 1940, however, small beginnings had been made in a number of countries in the use of such standards applied to consumer goods in the retail market.

Four Stages. According to the scale on which it is carried out, standardization may be classified roughly in four stages:

1. By individual companies
2. Group standards developed by associations and government bureaus
3. On a national scale
4. On an international scale

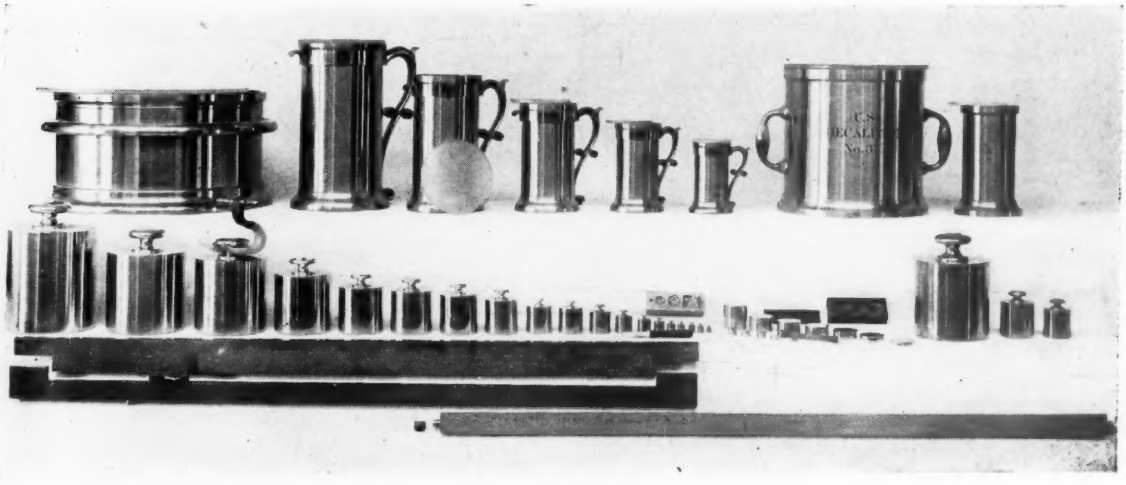
The number of individuals and organizations interested in any particular piece of standardization work increases greatly from each of these stages to the next. Also the difficulties as well as the importance increase from stage to stage.

Generally two or more stages develop simultaneously. A piece of standardization work which has been carried out by a society or an association may have been put upon so sound a basis that it becomes essentially a national standard. The same is true even of the work of individual companies.

Every industrial plant is carrying on standardization of its own products and processes, and its competitive success largely depends upon the cleverness and thoroughness with which it has studied and solved these problems. Sound plant standards are essential to mass production.

Standardization within individual companies, which got thoroughly under way during the last half of the 19th century, gave rise to collective standardization for entire industries. Such standardization by industries, carried on through their technical societies and trade associations, has for the most part been a product of this century. The use which electric motors and lamps have attained would have been impossible had it not been for the collective standardization carried on in the electrical industry, not only in fundamentals such as voltages and frequencies, but also in such details as the interchangeability of lamp bases and sockets. The adoption of a standardized track gage and of a standard system of interchangeable brakes and couplings was a necessary step in the development of national railway systems.

Just as standardization by individual companies led to standardization by technical and industrial groups so standardization by groups has in turn been found insufficient, because so many problems affect numerous diverse industries and require common solution. This has led to inter-industry or national standardization in behalf of industry as a whole, technical and trade associations and



The weights and measures upon which our system of distribution depends.

The accuracy of commercial weights and measures is maintained by cooperation between the States and the National Bureau of Standards. These standards of length, mass, and capacity were furnished to the States by action of Congress June 14, 1836, and July 27, 1866.

Courtesy Pratt & Whitney Co.

In mass production, whatever degree of accuracy is required is secured by such standard devices as "Go" and "Not Go" gages

government bureaus here playing the same role as individual companies play in group standardization.

National Standardizing Bodies. That standardization cannot reach its greatest effectiveness until it is treated as a national problem has been recognized in all the leading industrial countries. By 1939 national industrial standardizing bodies were functioning in the following 27 countries: Argentina, Australia, Belgium, Canada, China, Czechomoravia, Denmark, Finland, France, Germany, Great Britain, Greece, Hungary, Italy, Japan, Latvia, Netherlands, New Zealand, Norway, Poland, Roumania, Spain, South Africa, Sweden, Switzerland, USSR, United States.

All of these but the British Standards Institution, which began in 1901, were organized during or since the Great War of 1914-18. That war gave a great impetus to standardization throughout the world, because of a demand for materials on an unprecedented scale.

Most of these national bodies are predominantly industrial, but all have the active cooperation of their respective national governments. In Japan, Latvia, New Zealand, and the USSR, the central body is a governmental organization.

The method of work used by these national standardizing bodies in the various countries follows in general the pattern developed by the British. In order that each standard shall represent a national consensus of those concerned with its subject matter (*e.g.*, those who make, sell, and use a product), each is formulated by a technical committee made up primarily of accredited representatives of the various bodies concerned with the standard in question.

International Cooperation constitutes the fourth and most difficult stage in the standardization process. Naturally much less has as yet been accomplished internationally than nationally, yet beginnings have been made in several fields and in some of these there has been substantial progress. A large degree of international uniformity has been attained in fundamental scientific nomenclature, as in astronomy, biology, chemistry, geodesy, microscopy, and physics, and also in standards of measurement. Parts of this work have been carried out through international congresses, and other parts through specialized international organizations such as the International Electrotechnical Commission, the International Commission on Illumination, and various international scientific unions.

In order to further international cooperation, the national bodies maintain the International Federation of the National Standardizing Bodies (ISA), which was set up in 1926 and which has its headquarters at Basle, Switzerland. The national bodies of 22 countries are members of it.

The activities of the ISA cover a broad field. By 1939 work on 47 projects was under way and substantial progress had been made toward securing international uniformity in such diverse fields as photographic and acoustical standards; documentation standards for libraries, including microfilm technique; and limit systems for machine parts to provide for interchangeable fits. Worldwide interchangeability had been obtained in some cases, as in metric ball bearings and in 16 mm moving pictures.

International trade and cultural interchange have been greatly facilitated by the large degree of uniformity in fundamental scientific standards that has been attained, and by the much more modest progress in industrial standards.

Examples in Special Fields. The assembly line in the modern automobile factory has become a classical illustration of great reduction in the cost of manufacture through the use of standards and the mass production methods which they make possible. The standardized parts which make up the completed car, or radio set, or refrigerator, are not made for stock and stored in a supply bin as in traditional factory practice, but flow continuously by means of automatic conveyors from the point at which they are fabricated directly to the assembly line. One plant has succeeded in producing, with a force of but

Courtesy Society of Automotive Engineers

The continuous-flow method of the assembly line shows the flexibility and accuracy which standardization has attained.

200 workers, 10,000 automobile frames per 24 hours. This involves the manufacture, in different places in the plant, of 125 parts, which must be sure to fit; having these parts meet at one place on schedule; piecing them together at the rate of a complete frame every eight seconds; and doing this accurately 10,000 times a day. Similarly the completed cars do not go into a warehouse, but directly from the assembly line to the dealers. The large automobile manufacturers do not maintain storage facilities for even a single day's production of cars. Under such advanced methods of production, the cost has been reduced to a small fraction of what it would otherwise be. This has made possible the almost universal use of motor vehicles in industrial countries. (*See* Mass Production.)

Thoroughgoing standardization has greatly enlarged the market for citrus fruits and apples. With the assistance of the U. S. Department of Agriculture the growers on the west coast of the United States standardized their horticultural and packing methods, and graded the fruit by size and quality. These western apples soon became predominant in the market of the country, even in competition with local supplies thousands of miles distant.

A coordinated system of paper sizes, originating in Germany, has been adopted in many of the countries of continental Europe.

Specifications for iron and steel, non-ferrous metals, textiles, ceramics, oils, and many other semi-finished materials entering into innumerable manufactured products have been developed in all industrial countries, and are in extensive use for quality control. In several countries this work, including methods for testing materials, is carried on by special engineering societies organized for the purpose.

The more highly industrialized countries have found it necessary to establish national safety standards for the protection of employees in industry, which are given the force of law. In most countries such standards are administered by the national government. In the United States the individual states have jurisdiction, and national uniformity is secured through the American Standards Association, which serves as a clearing house in this work for industry, insurance, state and federal governments.

In the industrialization of their countries, Japan and Soviet Russia have made extensive use of the industrial standards of Europe and America and especially those of Germany, Great Britain, and the United States.

Standards for Consumer Goods. Since about 1925 standards for goods and services purchased by families and individuals to fulfill their daily needs and desires have begun to be developed. The world-wide recession in economic ac-

tivity, which caused widespread unemployment and curtailed incomes of many persons, gave added impetus to this development. Individuals feel that they should have the same opportunities as large industries and government agencies to judge the relation between price and quality or performance, in order to conserve their incomes by being able to select those things which best suit their needs at prices they can afford to pay. With the bewildering variety and quality of highly fabricated and packaged goods, the individual buyer feels helpless. Consequently a "consumer movement" has been developing in several countries, notably in the United States, where in 1939 a public opinion survey by advertisers indicated that at least ten million people had some notion of the question. Consumers want standards for consumer goods, and they want these standards expressed in simple language printed on labels affixed to goods, and used in describing products in advertising and selling them.

Economic and Social Significance

Language standards enable us to articulate our thoughts; legal standards enable us to live together—all social organization would be impossible without social standards. The growth of technology has made it impossible to maintain a functioning economic life without more and more material standards—the language of commerce.

It is commonplace that standardization has been an essential factor in the great increase in the real incomes of the populations of industrial countries since the latter part of the 19th century. This is because standards underlie all mass production methods, and because they facilitate the integrating processes necessary to large scale production and distribution.

In the flow of products from farm, forest, mine, and sea, through processing and fabricating plants, and through wholesale and retail markets to the ultimate consumer, most difficulties are met at transition points—points at which the product passes from department to department within a company, or is sold by one company to another or to an individual. The main function of standards is to facilitate the flow of products through these transition points. Standards are thus both facilitators and integrators. In smoothing out points of difficulty, or "bottlenecks," they provide the evolutionary adjustments which are necessary for industry to be able to keep pace with technical advances. They do this in the individual plant, in particular industries, and in industry at large. They are all the more effective as integrators in that they proceed by simple, evolutionary steps, albeit inconspicuously.

This integrating effect of standards in improving the efficiency of plant operation has been summarized as follows by Howard Coonley, a former president of the National Association of Manufacturers (USA): "After long experience in company operation, I have been more and more impressed with the fact that the use of effective standards is one of the most reliable tools an executive can have to reduce the pressure under which he lives. Standards cut down on the number of conferences that it is necessary to hold, on the number of misfires, on controversies in the operation of the plant, and on controversies with customers. In most cases this is brought about by solving problems in advance, so that they never come before the executive for his consideration. The advantages which my company has reaped from the extensive use that we have made of standardization could, I believe, be summed up in the phrase, 'reducing things to simple routine.' It has cut down the pressure on executives from top to bottom of our company, releasing them from the necessity of making many minor decisions. In fact, standardization is a major key to administration. When a company has introduced a well-rounded program of sound standards for office, purchasing, and operating routine, as well as for engineering and shop practices, that company is well along toward an effective organization."

The Human Element. In standardization work the human element is far more important than is generally realized. In setting up standards, the human difficulties are usually much more serious than are the technical ones. On the other hand, one of the chief functions of standards is to remove conditions which lead to controversies. As has been indicated, the lack of adequate standards is a prolific cause of controversy—parts that do not fit, supplies and materials that prove unsuitable because they have not been properly specified, goods that do not live up to sales representations. Such transition-point difficulties often result in feelings of resentment or of frustration on the part of the personnel involved, and thus give rise to controversies—often deep-seated ones. Indeed a goodly proportion of present-day industrial standardization, such as that carried on by the national standardizing bodies, is undertaken in the first instance to remove controversies. These controversies are usually resolved, or at least greatly mitigated, by the introduction of standards which solve the mechanics of the difficulty.

In fact, in the broader field of human relations there are many social standards, such as manners, which are devices for "sublimating" into social amenities what would otherwise be irritations resulting from everyday human contacts.

For example, when a man who has accidentally bumped against another says, "I am sorry," he is using a standard technique of social behavior which is usually effective in preventing emotional irritation.

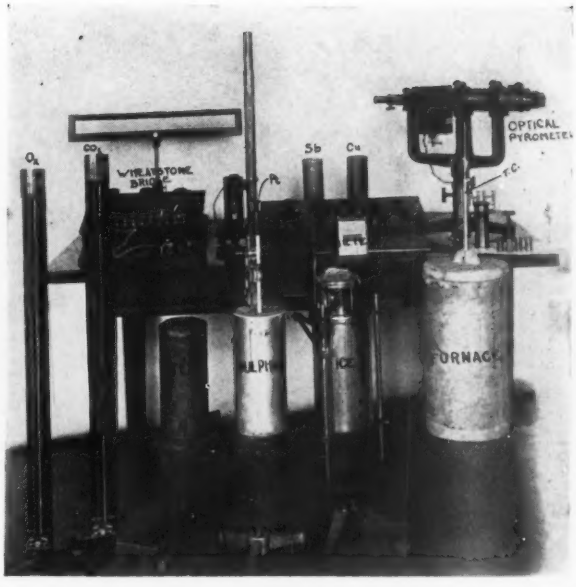
The Consensus Principle. Because of the importance of this human relationship, the national standardizing bodies and other experienced groups take great pains that each standard shall represent a consensus of those concerned with its subject matter. This is accomplished by direct representation of all interested groups upon the committee charged with the formulation of the standard. Each technical committee, made up of representatives of all interested groups, is essentially a miniature legislature organized upon an industrial rather than a geographical basis.

It is instructive to compare this cooperative method with the common-law and the statute-law methods of establishing law, which is a basic type of social standard. The common law has been one of the strongest and most fundamental forces in Anglo-Saxon civilization. Its slow, evolutionary growth has made possible so perfect an adjustment to the conditions of the civilization with which it developed, that few forms of social control have exceeded it in power and effectiveness. Perhaps only the control exerted by folkways has been more powerful. Legislatures have largely replaced the common-law method of law making. In the legislature, powers and problems become so pyramided into national political systems that most specialized problems get lost, or they, and the groups concerned with them, are so remote from the seat of authority that the decisions reached often partake of the nature of autocratic decrees. The significance of the consensus principle lies in the fact that it is more flexible than the legislative method and that it has much of the strength of the common-law method. Its simple directness gives it the vitality of elementary local self-government.

Questions settled by decree often do not stay settled because they have not been solved, but only decided. On the other hand, in the process of setting up a standard by means of the consensus principle, controversial matters usually are threshed out, often with the aid of research, until a solution, and not merely a compromise, is reached.

Standardization and the Machine Age. In the extensive discussions of the "machine age" and its relation to the profound economic and political dislocations that have taken place since the World War of 1914-18, much has been said of standardization which is part and parcel of the machine age and cannot be separated from it.

Advances in technology are continually binding populations as well as industries closer and closer together. With this ever-increasing interchange, the number of transition-point problems is always increasing. As we have seen, the solution of these problems requires more and more standards, which thus perform functions of primary importance.



Apparatus at the National Bureau of Standards for reproducing the International Standard Temperature Scale.

The scale is based on the boiling points of oxygen (−183 C) and of water (100 C), and the melting points of ice (0 C), sulphur (444 C), silver (960.5 C), and gold (1063 C)

Most of the criticisms that have been directed against standardization have been based upon a misconception of the nature of the process. These are to the effect that our minds are regimented by the fact that industry is consciously adopting standards; that the world is being reduced to dull mediocrity by standardization; and that it is one of the main "evils" of a civilization dependent upon the machine. One school goes so far as to predict that the machine age, through technologic development, specialization, and standardization will either destroy the race, or reduce it to a completely static condition similar to the communal life of ants and bees.

The misconception underlying these views is the idea that standardization means to stand still. To an industrialist a sound standard represents the best way of doing a thing—at the moment. If tomorrow he finds a better way, he will codify it in a new standard. "Were it not for standards," says Whitney, "there would be nothing to stand

U. S. Bureau of Home Economics

The round-table method is used in developing national industrial standards. Producer, distributor, user thresh out their divergent points of view in open meetings striving for a solution of basic problems rather than mere compromise. This committee of the American Standards Association is working on standard sizes for children's garments.

on to make a fresh advance. All one's energies would be used up in meeting the idiosyncrasies of the immediate moment. In the field of industry each piece of machinery would be an individual problem, even each screw, each bolt and each nut. Standardization is thus the liberator that relegates the problems that have been already solved to their proper place, namely, to the field of routine, and leaves the creative faculties free for the problems that are still unsolved."

Sound standardization is dynamic, not static. It means, not to stand still, but to move forward together. By facilitating the flow of products through industry and commerce, standards help to maintain what an engineer would call *dynamic stability* in industrial processes—just as a motor car in motion or an airplane in flight will respond with nicety to the slightest touch on the controls, and will right itself instantly following any slight disturbance—such as a bump in the roadway or a gust of wind—provided the machine has dynamic stability. The danger of stagnation lies, not in the use of standards, but in taking a fixed mental attitude, instead of always keeping the mind receptive to new ideas.

Most students of the subject take the ground that what is wanted is more, not less, science—that the social sciences must be brought up to a level more nearly that which has been attained by the physical sciences, and most important of all that a science of human relations must be developed. They point out that systematic research is something that is new in the world, and it may invalidate all analogies drawn from history or biology.

The relation between research and standardization may be summarized in a word by saying that standardization consists in finding out the best way of doing a thing, and then doing it that way—until a better way is discovered. And standardization is a major factor in conserving the time, the resources, and the mental energy necessary to find a better way. Thus, research and standardization are complementary factors in an advancing industry—more broadly, in an advancing civilization.

Revised Bolt and Nut Standards Being Considered by Committee

A revision of the American Standard for Wrench-Head Bolts and Nuts and Wrench Openings (B18.2-1933) has been completed by the subcommittee in charge and is now being considered by the ASA Committee on Standardization of Bolt, Nut and Rivet Proportions. This committee is sponsored by the American Society of Mechanical Engineers and the Society of Automotive Engineers.

Manufacturers and Artists Plan Paint Standard

First Such Conference in History of Art Produces Code Draft in 10 Hours

From the "N. Y. Herald Tribune," February 10, 1940

THE National Bureau of Standards, hitherto pre-occupied with such mundane matters as setting up criteria for mopsticks, wallpaper, men's pajamas and mattresses, invited 150 artists, technicians and paint manufacturers to the Museum of Modern Art, 11 West Fifty-third Street, yesterday to consider a commercial standard for artists' oil colors.

Holger Cahill, national director of the Work Projects Administration Art Program, said it was the first time in the history of art that painters and manufacturers joined forces to improve the quality of pigments. From 10 a. m. to 8 p. m. the conference wrestled with a proposed fourteen-page commercial standard covering minimum requirements for color, working quality and durability of artists' oils.

When F. W. Reynolds, of the National Bureau of Standards, opened the meeting he found the artists, including representatives of eleven art societies and ten museums and colleges, solidly arrayed on one side of the room and the paint manufacturers on the other. The atmosphere was chilly, but presently it was disclosed that every one wanted a standard, and at 8 p. m. all the major issues had been settled except a few technical matters that were referred to a joint committee. Before the standard is adopted it must be accepted by producers and artists representing 65 per cent of the volume of trade.

Both sides hailed the result as a major step toward solving technical problems confronting the artists. Because of faulty pigments scores of modern masterpieces are deteriorating. Some of the best works of Whistler, Sargent and Luks are doomed and, according to Mr. Cahill, all the canvases of Albert Pinkham Ryder will be obliterated in another hundred years.

For a tragic example of the blistering and cracking of inferior oils the artists and manufacturers had only to visit Ryder's famous "Macbeth and the Three Witches," currently displayed in the museum's first-floor gallery. This painting, over which Ryder labored for eighteen years, already has faded to the point where the witches are hardly visible.

The inspiration for a commercial standard to safeguard the artist came to the Federal Art Project two years ago, when the WPA, world's largest single consumer of artists' color, found it was paint not fit to cover a foreman's shanty. A criterion was evolved and two paint-testing machines invented at the WPA's Boston laboratories. Rutherford J. Gettens, Fellow for technical research at Fogg Museum, Harvard University, and Frank W. Sterner, technical director of the WPA paint-testing and research laboratory, drew up the proposed standard, which was acted upon yesterday.

A committee headed by Mr. Gettens will decide when the code will be published.

Minimum Diameter Recommended As "Plus" Not "Minus"

On page 103 of our April issue we announced that the National Electrical Manufacturers Association is requesting a revision of the American Standard for Shaft Couplings (B49-1932) to provide for a tighter fit between the two halves of the coupling. In reproducing the table of tolerances which NEMA is suggesting as a substitute for the table given in Note 1 of the American Standard, we gave the Limits of Projection as "Maximum Nominal Diameter Plus" and "Minimum Nominal Diameter Minus," whereas both the Maximum Nominal Diameter and the Minimum Nominal Diameter should have been Plus. The Limits of Projection in the new table should, therefore, read:

Limits of Projection

Maximum Nom. Dia. plus	Minimum Nom. Dia. plus
.0010	.0005
.0015	.0010

The last sentence of this article refers to the "ASME request for a revision." This should, of course, read the "NEMA request."

Canadian Standards Association Acts to Speed Program

INCREASED work of the Canadian Engineering Standards Association, made necessary by the demands of the war, has brought about the appointment of F. A. Sweet as Assistant Secretary of the CESA, the Association announced recently. Mr. Sweet is a graduate in civil engineering of the University of Toronto and will act as assistant to Colonel W. R. McCaffrey, CESA secretary.

J. G. Morrow, Steel Company of Canada, Ltd., has been reappointed chairman of the CESA for three years, and W. E. Ross, Canadian General Electric Company, Ltd., has been elected second vice-chairman for the same term. F. A. Loosley, Dominion Foundries and Steel, Ltd., has been elected honorary secretary.

One important program started by the CESA since the war is to review British specifications and to suggest substitution of materials manufactured according to Canadian specifications in place of the British materials required in the British standards. Specifications for steel ordnance and aircraft construction materials are the first to be studied. It is expected that this policy of substituting Canadian for British materials will save time in making the materials available.

Another problem before the CESA committee in charge of this program was collection of data on types, quantities, weights, lengths, and other properties of materials used in the manufacture of aircraft.

A new CESA committee has been organized to prepare a standard for copper-nickel alloy, it was announced at a meeting of the Executive Committee March 15.

Specifications for wood poles are being considered, the American Standards for wood poles forming the basis for the Canadian standards. A draft standard covering Northern White Cedar and Western Red Cedar has already been prepared, each species with its own table of dimensions and limitations.

Work has been started on eye-screens for welders by a new committee which held two meetings in March. Among problems discussed were provisions for protection against glare from reflected sunlight from snow, water, roadbeds, etc., and provisions covering spectacle goggles.

More detailed arrangements have been made for carrying out the plan of approvals for electrical equipment. The Approvals Council will have the following duties:

1. To act in an advisory capacity in matters of approvals
2. To vote on Laboratory Approvals Reports and recommend issuance of CESA Approvals Service
3. To serve as a medium of communication between the CESA and inspection authorities in order to secure uniform adoption and enforcement of the Canadian Electrical Code approvals throughout the country.

The laboratories of the National Research Council and the Hydro-Electric Power Commission have been authorized to carry out tests for approval, and an informal arrangement has been made with Underwriters' Laboratories, Inc., Chicago, for testing equipment for use in hazardous locations.

Several new and revised standards were announced recently. In the third edition of the Standard Specifications for Portland Cement (A5-1940) the permissible loss on ignition was reduced and tolerances were established for chemical constituents of Portland cement. A higher degree of fineness was specified, and initial set was increased to a limit of 45 minutes and a final set reduced from ten to eight hours. A three-day tensile test on briquettes was included and the 28-day test made optional to the purchaser. Tensile strength requirements for 7-day and 28-day tests were also increased. The bag weight was reduced from 94 lb to 87½ lb to correspond to a barrel weight of 350 lb. Additional requirements relative to storage, and provisions for rejection due to deterioration were also included. Only slight revisions were made in the appendices dealing with sampling, testing, and chemical analysis. The principal change was in the method of determining the amount of ferric oxide in Portland cement which was revised to conform to the corresponding ASTM specification C9-38. Specifications for High-Early-Strength Portland Cement, based on ASTM Specification C74-39 but revised slightly to meet Canadian requirements are also included in this standard.

The new Standard Specifications for Hard-Drawn Aluminum Wire, Aluminum Cable, and Aluminum Cable, Steel Reinforced (C49-1940) is the first Canadian specification on this subject.

The requirements cover the mechanical and electrical characteristics of the conductor as a whole, and of the individual aluminum and steel wires making up the complete cable.

A second edition of the standard for Construction and Test of Electric Signs (C22.2 No. 2-1940) includes requirements for incandescent lamp and luminous-discharge-tube (gas-tube) signs, and combinations of both, used for general advertising and display purposes. Construction details for both the stationary and portable types of sign, marking and tests are included, and new clauses apply to high and low-potential wiring, transformers, and electric clocks.

Work is nearing completion on Steel Structures for Buildings (A16) and Concrete and Reinforced Concrete (A23), the Canadian Engineering Standards Association announced.

New Jersey Starts Work On Welding Standards

As reported by the May, 1940, issue of "Safety Briefs," published by the National Safety Council

LEADERS of industrial and construction firms and manufacturers of different types of welding equipment have been called together by John Roach, Deputy Commissioner of Labor for New Jersey and Director of the Committee on Industrial Hygiene of the New Jersey State Industrial Safety Committee, to establish a set of welding standards for New Jersey's industry.

At a preliminary meeting of these representatives on March 28 a special committee was appointed to analyze the welding problems in New Jersey in order to present an outline of the work the state standard would have to control. This committee consists of F. C. Fyke, Safety Engineer of the Standard Oil Development Company; J. H. Love, Personnel Director, Federal Shipbuilding and Dry Dock Co.; Louis Dunfinger, Superindent, Tietjen and Lang Dry Dock Co.; and B. L. Vosburgh, M.D., Medical Director, General Electric Co.

Their report was presented at a committee meeting on April 25. Miss Lillian Erskine, nationally known industrial consultant, presented an exhaustive survey of welding accidents and a bibliography on the subject at the committee meeting. The group is now studying the laws, codes, and standards in force in other states and in foreign countries to select the sections most applicable to New Jersey's industry and the sections which have been found most serviceable over a period of years.

The New Jersey State Industrial Committee has followed the practice of insuring safety of industrial workers through standards set up by the New Jersey State Department of Labor rather than through the adoption of codes by legislative action. This avoids the difficulties in later years of obtaining legislative amendments for rigid laws which have been outgrown by new developments in industry. The standard can be adapted by the State Department of Labor to meet new technical developments in materials or processes.

Commissioner Roach stated, "The formulation of welding standards for this state is of the utmost importance to the development of industry and the welfare of workers in New Jersey. Little has been done elsewhere in the country to keep abreast of welding improvements but the great variety of New Jersey's enterprises demands that welding operations be kept at the highest level. Welding is undergoing development not only in its techniques but also is finding new applications in construction and industrial work. The standards formulated by this committee will be of great importance in aiding further improvements."

Tool Engineers Represented On ASA Standards Council

The American Society of Tool Engineers, new Member-Body of the American Standards Association, has appointed E. W. Ernest as its representative on the ASA Standards Council and Mechanical Standards Committee. Mr. Ernest is chairman of the ASTE National Standards Committee. C. E. Ives of Chicago, who is a member of the ASTE National Standards Committee, will serve as Mr. Ernest's alternate on the Standards Council, and Carl J. Oxford, chief engineer of the National Twist Drill and Tool Company, Detroit, will act as his alternate on the Mechanical Standards Committee.

The Mechanical Standards Committee is the coordinating committee for all the work on mechanical standards carried on by committees of the American Standards Association. The ASA Standards Council makes all final decisions on approval of standards, initiation of standardization projects, and personnel of standards committees for the American Standards Association.

Rochester Industry Organizes To Exchange Ideas on Standards

by

James A. Thetford[1]

Chairman, Industrial Standards Group of the Rochester Industrial Management Council

"TO learn from each other by informal talks, questions, and answers the objectives, methods, and achievements of each other, and of organizations outside Rochester, in the field of material, process, and design standardization."

With this idea as its guiding principle, the Rochester Industrial Standards Group of the Rochester Industrial Management Council came into being.

The Group was founded two and one-half years ago by individuals who each represented a different company but who were all deeply interested in industrial standardization. All had one thought in organizing the group—that it would help them to do their jobs better.

The actual founding of the group was brought about at an informal dinner attended by 12 representatives of the larger industries of Rochester. These men met to determine whether it would be possible, or even advantageous, for all the industries in and about Rochester which work on standardization of materials to meet and discuss their standardization problems. It was unanimously agreed that despite the widely diversified fields of production covered by the industries represented, all the companies have many standardization problems in common, such as methods of attack, methods of control, and difficulties encountered in writing material, process, testing, and design specifications, as well as many similar problems. By taking part in the Group and exchanging specifications and ideas all the companies could profit from the experience of the others, it was decided.

As a result of the discussion at this first meeting, a committee of three was organized to draw up a statement of purpose and to plan the meetings. The purpose they outlined is quoted in the first paragraph of this article.

Although the Group has grown from the original 12 members to an average of better than 60 who now attend each of the monthly meetings, the original three men are still on the Steering Committee. This committee, which controls the policies of the Group and plans its programs, now consists of six members.

Our programs have been varied and interesting during the two and one-half years that the Group has been meeting. Prominent outside speakers on various subjects relating to standardization; local speakers on specific subjects either concerned with a definite standard or with the operation of their particular standards set-up; and one or two meetings a year for symposiums are planned by the Program Committee.

One of the best meetings this year was a sym-

[1]Mr. Thetford is head of Material Standards of the Bausch & Lomb Optical Company, Rochester, N. Y.

The unusual cooperative program undertaken by the industries of Rochester, New York, in organizing an Industrial Standards Group offers suggestions which we believe will be interesting to all members of the American Standards Association. The Group, organized two and one-half years ago as a means of exchanging information and ideas on standardization problems, has proved valuable not only to the engineers who have attended the meetings, but also to their companies, according to James A. Thetford, the Group's chairman.

In this article, Mr. Thetford tells how the Group was organized, and how it operates.

—EDITOR.

posium on Simplified Packaging. The first speaker was a man whose sole job is to standardize and control the packaging and containers for a very large industry. Another speaker was a purchasing agent who described the value of a control for packaging and told about his difficulties in purchasing, both with and without standards. The third speaker was a representative of a large box factory who told us something about the limitations of the concerns supplying containers and to what extent they could and would meet the requirements of industry. The meeting became something of a debate between the three speakers, and after a question-and-answer period, all who attended the meeting came away with a greatly increased understanding and knowledge of container problems.

It was interesting to note the reaction of the Group when three of our speakers, talking on "Standardization of Electro-Plating Practices," "Mechanical Packing," and "Standardizing of Tool Steels," implied that standardization, although not impossible, was impractical in their fields. Rather than accept this implication as a fact, the Group considered it a challenge and tackled these subjects with such interest and vigor that as a result in a few cases new standards have been established and are now proving satisfactory.

Discuss Many Different Subjects

The following selected list of topics and speakers will give some idea of the diversity of the subjects presented and the quality of the speakers. Both have greatly aided in the success of the Group.

Modern Standardization Methods—Dr. John Gaillard, American Standards Association, New York

Standardization Problems in an Electrical Manufacturing Company—H. W. Samson, Head of Standards Department, General Electric Company, Schenectady, N. Y.

Purchasing Specifications for Tool Steels—F. R. Palmer, Assistant to the President, Carpenter Steel Company, Reading, Penn.

Standardization Methods and Results—F. A. Compton, Detroit Edison Company, Detroit, Mich.

Interchangeable Manufacturing—L. W. Dwyer, Gage Supervisor, Watervliet Arsenal, Watervliet, N. Y.

The Application of Preferred Numbers—H. W. Tenney, Manager, Engineering Laboratories and Standards Department, Westinghouse Electric & Manufacturing Company, Pittsburgh, Penn.

Standardization and Control of Machined Finishes—R. F. Gage, Assistant to Chief Engineer, Wright Aeronautical Corporation, Paterson, N. J.

One of the questions that readers may want answered is how we obtain speakers. A list of subjects with a corresponding list of qualified speakers to discuss these subjects is first made up by the Steering Committee. A letter is then sent to the person selected by the committee, explaining the Group, its interest, and the subject the committee would like to have discussed. Those approached always seem glad to accept. Surprisingly, we have had only two non-acceptances, and in one of these two cases, the proposed speaker was confined to the hospital. The invited speakers, in most cases, are either standards men interested directly in the cause of industrial standardization, who are proud to tell of their activities and accomplishments, or they are from companies which must supply materials to meet other companies' specifications. In the latter case, they are interested in using their talk as a means of educating those who write the specifications.

As to compensation—here again, it is surprising, but of the 33 speakers we have had to date only two have turned in a bill for expenses. In most cases, the companies which these men represent feel that it is good advertising to send their men before a Group of this kind, and believe that the men, themselves, will benefit from the discussions and from meeting the representatives of other companies who attend the Group meeting.

As a group, we must admit that we have a slight advantage over any similar group in another locality in that we were fortunate in having at our disposal the Rochester Industrial Management Council with which we could become affiliated. This Council, of which we are members, is the clearing house for Rochester industry on many subjects and provides a forum where ideas and

information of value to all is constantly exchanged.

It is an association of leading Rochester manufacturers organized in 1916 for the following purpose:

"Through cooperation, investigation by paid experts, and systematic interchange of ideas and information, to secure for members the benefits of the best, most efficient, and most economic factory methods in use."

The Council has many groups, headed by an Executive Committee and a group of General Managers. Among these groups, in addition to our own Industrial Standards Group, are:

Employment and Personnel Managers Group
Superintendents and Production Managers Group
Industrial Safety Group
Industrial Nurses Group
Office Managers Group
Foremen's Group
Evening Discussion Group
Statistical Group (rather a committee)
Time and Motion Study Society

Some of these groups hold Steering Committee Meetings weekly at the noon hour; others, like the Industrial Standards Group, hold such meetings on call. Some hold evening meetings fortnightly in the cooler months, others monthly.

The meetings of the Industrial Standards Group, fortunately, are not limited to those who are directly connected with company standards. On the other hand, it is the policy of its members to bring with them those individuals from their company who are basically interested in the subject scheduled for discussion. In this way, the value of these meetings is not limited to those of us who write the standards and specifications, but it helps to show those who use the standards the scope of the problem and how, through standardization, they may be able to do their jobs better. When our fellow-workers are more thoroughly sold on standardization, our jobs become easier because closer cooperation with all involved makes it possible to establish more satisfactory standards.

Not only the members of the Group, but also the companies they represent and the Rochester Industrial Management Council, believe that a great deal has already been accomplished, and that more will be accomplished through continuing these meetings.

National Bureau of Standards Publishes Discussion on Package Standardization

THE complete text of sessions devoted to package standardization at the Twenty-Ninth National Conference on Weights and Measures, June 8 and 9, 1939, has been published by the National Bureau of Standards and is now available as Miscellaneous Publication M165. The publication includes the report of the Conference Committee on Standardization of Packaged Goods, the discussion of the report, and seven papers giving the viewpoints of representatives of consumer groups, food distributors, canners, grocers, and can manufacturers.

At these meetings, the Conference approved the report of its Standardization Committee which concluded that present practice leads to fraud, deception, and unfair competition; that quantities of all commodities sold in packages or containers should be standardized; and that a Federal law is needed.

It also recommended that the Somers bill should be amended to provide for standardization by liquid measure for those commodities which are sold by liquid measure, in place of the original provision for standardization of can sizes. All containers of the same quantity should be of identical dimensions, the committee recommended.

The Conference standardization committee was continued for another year with the recommendation that it confer with industry to work out necessary legislation. Its report, presented at the Thirtieth National Conference on Weights and Measures at Washington June 4-6, will be reported in the July issue of INDUSTRIAL STANDARDIZATION.

Copies of Miscellaneous Publication M165, Standardization of Packages, is available from the Superintendent of Documents, Washington, D. C., at 10 cents each.

Underwriters' Revise Standard For Electric Heating Appliances

Underwriters' Laboratories have announced a revised edition of their Standard for Electric Heating Appliances, giving safety requirements to which these appliances must comply before they are granted approval by Underwriters' Laboratories and marked with the Laboratories' Seal of Approval. The revised standard supersedes the standard of December, 1936, and takes effect immediately.

Man Failure— Or Was This an Alibi?

The proposed American Standard for Compiling Accident Statistics will help to give the answer

The proposed American Recommended Practice for Compiling Industrial Injury Causes was printed in 1937 for trial in use before being finally completed and submitted to the American Standards Association for approval.

This paper, presented before the Massachusetts Safety Conference at Boston March 11, by F. W. Braun, vice-president and chief engineer of the Employers Mutual Liability Insurance Company of Wisconsin, and general chairman of the engineering section, American Society of Safety Engineers, shows how the proposed code is being used and what type of information can be found by using it.

Through a subcommittee, the committee in charge of the development of this code has been at work during the past year preparing a revision of the proposed code. A meeting of the full committee was held on April 17, 1940, to consider a report of the subcommittee. A final draft, to be acted upon through a letter ballot of the committee, is now being prepared.

TRUE progress in accident prevention can be made only when we definitely place responsibility for accidents. But to accurately place responsibility we should first have a uniform code which all industry can follow in determining the causes of various accidents.

It is easy to blame man-failure for many accidents unless we dig deeper into the facts. We should not feel that accident investigation of causes should confine itself only to the conduct of men in the plant; we should include the conduct of the management as well. Management-failure should be given equal consideration with man-failure. After all, maintenance, enforcement, and the providing of guards are management problems. Leadership to provide proper incentive toward eliminating man-failure must come from the management. If, from a reliable and thorough accident-cause table, we could build into the rate-making structure a definite amount chargeable to management, then management would be willing to assume leadership in accident prevention.

Aside from the humanitarian angle, accident prevention is good business. Why not show management what it should do to establish that good business practice? We have all these years placed the emphasis in our injury-type studies and cause tables on the man on the job, the foreman, and others, but we lack definite information on management.

I am sure all of you agree that the present accident-cause statistics are of no great value for accident-prevention purposes. Statisticians are the only persons who use them. People who deal with accident prevention would probably use them except that the information they contain is so inadequate as to be of very little help.

Statistics developed from industrial injury reports for workmen's compensation requirements are not, and should not, be construed as true cause tables. They show us only the types of injury. They rely on lists of such worn-out phrases as "falls, falling objects, struck by object, etc." In some instances the types of accident are subdivided into such further detail as "fell downstairs, fell into elevator shaft, dropped

shaft on foot." Can these be considered causes? They would be of little help to a safety engineer in eliminating the difficulty unless he knew *why* the man fell down stairs, *why* he fell down the elevator shaft, and *why* he dropped the shaft on his foot. Knowing why, the engineer could take steps to eliminate the cause.

Industry needs a uniform cause table. The words accident and injury are often incorrectly used. An accident is an unexpected event; an injury is the result of an accident. Because the accident cause always comes before the injury, we should concern ourselves first with the proper cause analysis.

Recently the American Standards Association developed a very logical and practical industry cause code.[1] This code has these essential parts: the agency of the injury, the type or kind of accident, the mechanical cause, and the personal cause. To this, I would like to suggest the addition of another grouping, namely, management cause.

From a study of 1000 accidents made by the National Safety Council on the basis of the proposed Cause Code, it was reported that 67 per cent of all work accidents involve some unsafe act, and 78 per cent have some mechanical or material cause. The study brings out the further point that back of the unsafe act, in four cases out of five, lay some definite personal cause, and, in a similar proportion, some mechanical cause. According to the analysis, 26 per cent of all reported cases involved unnecessary exposure to danger, 16 per cent involved the improper use of tools or the use of unsafe tools, 15 per cent involved the nonuse of safety devices, and 10 per cent unsafe loading or arranging. When the mechanical or material causes were analyzed, it was found that 34 per cent of the cases involved unsafe processes or hazardous arrangement of machinery or material, and 18 per cent involved defective machines, tools, working surfaces, etc. Lack of knowledge or skill was listed as a personal cause in 48 per cent of the accidents, and improper attitude in 31 per cent.

Is Management Responsible?

It would be interesting to work out from this study a comprehensive investigation to determine what per cent of the accident causes studied in this report should be charged to management. The study says, for instance, that 16 per cent can be charged to the use of unsafe tools. If management is responsible for the tools and for the provision of good tools, why charge the accidents to unsafe tools? Why not charge 16 per cent to management-failure instead of man-failure?

Under mechanical causes in the proposed Cause Code, there are seven items.

1. **Improperly guarded agencies**
2. **Defective agencies**
3. **Hazardous arrangement, procedure, etc., in, on, or around the selected agency**
4. **Improper illumination**
5. **Improper ventilation**
6. **Unsafe dress or apparel**
7. **No mechanical cause**

Under the group of personal causes, there are four more:

8. **Improper attitude (that permitted or occasioned the unsafe performance of a person resulting in the injury)**
9. **Lack of knowledge or skill**
10. **Bodily defects (that permitted or occasioned the unsafe performance of a person, resulting in the injury)**
11. **No personal cause**

As subdivisions of these two major causes, mechanical and personal, I again suggest and recommend a cause table where management can definitely be charged with the cases for which it is responsible. With your permission, I should like to describe an accident that brings out two important issues on this cause table.

"Two men were instructed to clean a steep water tank in a yeast-manufacturing concern. The tank was about 20 feet deep, 8 feet in diameter, and open at the top. The men were given an ordinary kerosene lantern. Without further instructions, the man in charge assumed the men knew the purpose of the lantern in testing for oxygen deficiency. There was no possibility of inflammable vapors being in the tank, so the use of the flame safety lamp was not necessary in this particular instance.

"Instead of lowering the lantern into the tank by means of a rope, the one man carried the lantern in his hand, while descending a ladder into the tank. About half-way down into the tank, the lantern went out due to oxygen deficiency. However, neither of the men realized the significance of this, and the man on top yelled down that the flame must have gone out due to shaking of the lantern. The man, therefore, climbed to the top of the tank, relighted the lantern and again descended into the tank. The lantern flame went out again; however, by this time he had dropped some equipment to the bottom of the tank. He then proceeded to the bottom of the tank to retrieve this even though the lantern was out, again not realizing the significance of this. He was then partially overcome by lack of oxygen but did not lose consciousness and was

[1] The proposed American Recommended Practice for Compiling Industrial Injury Causes (Z16.2) which has been published for trial use and is available from the ASA at 50 cents.

able to climb out of the tank unaided (a life line would have been much safer) where he collapsed. He was revived by first-aid methods and suffered no loss of time."

Lack of proper equipment is the first defect. A lighted lantern is a poor device to lower into any kind of a tank. An approved safety lamp is the safe thing to use. The second defect, "lack of knowledge," stands out vividly. But does it trace back to man-failure? Is not management responsible for proper instruction? Is not management responsible for adequate and intelligent supervision? Any one who goes deeply into the details of this study must observe three major items which have also been evident to me from my own personal investigation of many accidents.

1. **Most accidents present a combination of personal and mechanical causes**
2. **Both causes are so important that they should be looked for in every industrial accident investigation**
3. **Defects can generally be corrected**
   a. **By sound safety engineering principles**
   b. **Education**
   c. **Management enforcement of safety regulations**

We should all urge that industry use the proposed American Recommended Practice Cause Code. Some men have made the statement that the code is too difficult for general use. If we could get *all* state authorities to use it, industry would gradually take hold. Education is needed on the requirements, and if possible, a more simplified form should be adopted which will embody all the essential details. Only the constant use of the form will determine what defects the cause table has. Only its use will answer these questions:

1. **Is it difficult to apply?**
2. **Is it too long?**
3. **Is it actually helpful in getting at the cause?**

The cause is the thing. When we have finally developed a cause study, when we have definitely gone deep into the industrial cause analysis, then we can answer the question, "Man-failure—or was it our alibi?"

Data on Performance Tests Of Floor Coverings Issued

The National Bureau of Standards has recently issued two pamphlets, BMS34 and BMS43, entitled "Performance Test of Floor Coverings for Use in Low-Cost Housing." The floor coverings tested included several types of linoleum, rubber in sheet and tile form, felt-base floor coverings having various wearing surfaces, monolithic floors, asphalt tiles, fiberboard, and strip-wood floors.

Lignin pastes, resinous cements, casein-latex cement, latex adhesives, rubber cements, asphaltic cements, asphalt emulsions, and nails were used as bonding agents. Installations on both concrete subfloors and wood subfloors were tested.

Important factors considered in the testing were conditions of subfloor as to evenness, cleanliness, and rigidity; exposure to which the installation is subjected, especially with respect to moisture, concentrated loads, and traffic; durability in relation to cost; and ease or cost of removal and replacement.

The performance of the test panels and the appearance of the different floor coverings, after being subjected to 48,000 cycles of the testing equipment, are shown in summaries, tables, and photographs.

Data from these studies and further studies now under way at the National Bureau of Standards will furnish further background and basic material for the American Standards Association Committee A22, now engaged in developing safety requirements for walkway surfaces.

Also, in this field, the American Hospital Association has just organized a committee to study the various types of floor dressings now on the market and the effect of such dressings on the preservation of floor coverings and on the frequency of accidents due to slips and falls on floors.

The two pamphlets mentioned above, BMS34 and BMS43, are available from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 10 cents each.

Stoddard Solvent Standard Revised and Accepted

A new edition, bringing up-to-date the Commercial Standard for Stoddard Solvent, has just been announced by the National Bureau of Standards, effective for new production June 20. This standard covers one of the most important of the petroleum products used by cleaners and dyers.

The changes in this edition are rather minor in character, applying chiefly to refinements in test methods. Subjects covered by the standard are physical and chemical properties, methods of testing, and certification of quality.

Mimeographed copies of this revised Commercial Standard, CS3-40, are available from the National Bureau of Standards, Washington, D. C. Printed copies may be ordered soon from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Cast-Iron Pipe Standards Are Based on Research

Three standards, prepared by the ASA Committee on Cast-Iron Pipe, tell how to compute strength and thickness, and give specifications for pit cast pipe for liquids, and for cement mortar lining

American Gas Association, American Society for Testing Materials, New England Water Works Association, and American Water Works Association take leadership in the work

AS a step in its program to develop specifications for cast-iron pipe, the ASA Committee on Specifications for Cast-Iron Pipe and Special Castings (A21) has completed three new standards. These include a manual for computing the strength and thickness of cast-iron pipe, specifications for cast-iron pit cast pipe for water or other liquids, and specifications for cement mortar lining for cast-iron pipe and fittings. In addition, the committee is preparing specifications covering cast-iron pit cast pipe for gas, and specifications for special types of pipe, bell and spigot fittings, flanged pipe and fittings, coatings, and linings.

Tests and research on pipe under various conditions were drawn upon by the committee in preparing the new standards, and records of these tests and the conclusions drawn from them will be published separately. The tests covered corrosion of different kinds of cast iron; tests of pipe under combined earth and internal pressures, upon which designs of the barrel of the pipe have been based; tests of hydraulic friction losses in fittings; bursting tests of pipe and fittings; tests of holding strength and deflection of bell and spigot joints; tests of lugs and harness for bell and spigot joints; and tests of welded clips for use with harness.

Some of the tests, carried out at Iowa State College, showed the magnitude of the backfill loads transmitted to pipe laid in ditches or under road embankments, and of the load added by vehicles superimposed on the backfill. They also showed the effect of various methods of supporting the pipe and the effect of tamping and not tamping the backfill.

Test Methods of Support

Later tests, made especially for the committee, carried these Iowa State College tests a step further by applying internal pressure simultaneously with external earth load to pipe supported in various ways and with backfill tamped and not tamped. Another method of support, by blocking, was also tested. This method, which is used by some constructors for water and gas pipe but not for sewer pipe, was not included in the earlier tests.

As a result of these tests a new theory of design was developed in which not only static water pressure and water hammer but also earth pressure and load from trucks are included in computations for thickness. Different methods of laying the pipe, supporting it on blocks or on the trench bottom, with or without tamping of backfill and with various depths of earth cover were also developed. The new standard specifications for cast-iron pit cast pipe for water or other liquids give thicknesses for some of these laying conditions.

The new American Recommended Practice Manual for the Computation of Strength and Thickness of Cast-Iron Pipe (A21.1-1939) explains the new principles and methods used by the committee in computing standard pipe thicknesses included with the specifications for pit cast and other types of cast-iron pipe. These principles and methods apply generally to cast iron of any strength. Part 1 of the Manual shows

how the methods may be used to compute the necessary thickness of a pipe under known conditions of internal pressure, earth cover, and method of laying, for any specified strength of iron.

Diagrams of earth load, truck super load, ratio to 3-edge bearing, and other data used in computing and fixing thicknesses in the specifications, as well as data which may be used for conditions other than those covered by the specifications, are included in the Manual.

Will Add Material to Help in Using Specifications

The methods for computing barrel thickness described in Part 1 are applied to cast-iron pit cast pipe in Part 2 of the Manual, and an appendix gives tables of thickness for cast-iron pit cast pipe for water or other liquids.

It is the intention of the committee, the standard explains, to add to the Manual any data which the committee will believe to be necessary for a proper understanding and use of any of the specifications for straight pipe, for fittings or for coatings.

The American Standard Specifications for Cast-Iron Pit Cast Pipe for Water or Other Liquids (A21.2-1939) contains tables of dimensions to which the pipe must conform. This type of pipe is cast vertically with dry sand molds and cores. The standard specifies the quality of the iron, and castings, how the pipe shall be cast, and how it shall be marked and inspected. It also includes sections on tests for material, and for test bars, including requirements as to how the material to be tested shall be prepared.

The American Standard Specifications for Cement Mortar Lining for Cast-Iron Pipe and Fittings includes requirements for Portland cement, and for the materials used in mixing cement. It also tells how pipe and fittings are to be prepared for lining, and methods of applying the linings, in addition to requirements for lining thickness and methods of determining thickness.

These three standards, approved by the American Standards Association in January, were prepared under the leadership of the American Gas Association, the American Society for Testing Materials, the New England Water Works Association, and the American Water Works Association.

They resulted from work started in 1902 by the New England Water Works Association, which at that time adopted Standard Specifications for Cast-Iron Pipe and Special Castings. These early specifications covered bell and spigot pipe and fittings and contained ten classes, A to K. The allowable heads for these classes were not given in the specifications but the thicknesses were based on allowable heads varying by 50 feet: 50-ft head for Class A; 100-ft head for Class B; up to 500-ft head for Class K. Dimensions and weights of pipe and fittings were given. In 1904 and 1908, two additional standards covering cast-iron pipe and special castings were adopted, by the American Society for Testing Materials and by the American Water Works Association. The ASTM specifications covered bell and spigot pipe and fittings and contained four classes, A to D, with allowable working heads varying by 100 feet. The American Water Works Association specifications, covering bell and spigot pipe and fittings, contained eight classes, A to H, with allowable working heads varying by 100 feet. Classes A to D were the same in thickness as in the ASTM specifications.

To unify these specifications the Sectional Committee on Specifications for Cast-Iron Pipe and Special Castings was organized in 1926 under the rules of the American Standards Association. The work of the committee is to include materials; dimensions; pressure ratings; methods of manufacture in so far as they may be necessary to secure satisfactory specifications; elimination of unnecessary sizes and varieties; consideration of the possibility of developing a coordinated scheme of metallic pipe and fittings which can be applied to all common mediums; and methods of making up joints in so far as they are determining as to the dimensional design of cast-iron pipe.

The types of cast-iron pipe which come under the committee's scope include bell and spigot pipe; flanged pipe; flanged and bell mouth fittings and wall castings; pipe elbows, tees, Y's, return bends and other fittings not now included in standard lists; cast-iron pipe threaded for flanges or couplings. The work does not include methods of installing pipe.

Pipe Standards Available

The three new standards have been published and are available from the American Standards Association, as follows: The American Recommended Practice Manual for the Computation of Strength and Thickness of Cast-Iron Pipe (A21.1-1939), 40 cents; American Standard Specifications for Cast-Iron Pit Cast Pipe for Water or Other Liquids (A21.2-1939), 20 cents; American Standard Specifications for Cement Mortar Lining for Cast-Iron Pipe and Fittings (A21.4-1939), 15 cents. Members of the American Standards Association are entitled to 20 per cent discount on all approved American Standards purchased through the office of the American Standards Association.

duPont Company Names Carpenter President

Lammot duPont Is New Chairman of Board

Lammot duPont, member of the Advisory Committee of the American Standards Association, has resigned as president of E. I. duPont de Nemours & Company, and has been elected chairman of the company's Board of Directors succeeding Pierre S. duPont. Walter S. Carpenter, Jr., who had been a vice-president, succeeded Mr. duPont as president.

Mr. duPont terminated his services as president because he has reached that period in life when he realizes a younger man ultimately must succeed him and when he personally desires more leisure than conduct of the office permits, he explained. He was first employed by the company in black powder manufacturing operations, and became director of that department in 1914. He was elected a director and a member of the executive committee in 1915 and vice-president the following year. He was elected president in 1926. He has served as president of the Manufacturing Chemists Association and as a director of the National Association of Manufacturers and the United States Chamber of Commerce.

Pierre S. duPont, who retired as chairman of the board of directors in favor of Lammot duPont, will continue as a member of the board and of the finance committee.

In addition to Mr. duPont, the Advisory Committee of the American Standards Association includes:

Howard Coonley, chairman of board, Walworth Company, *Chairman*
Ralph Budd, president, Burlington Lines
Floyd L. Carlisle, chairman of board, Consolidated Edison Company of New York
Dr. Karl T. Compton, president, Massachusetts Institute of Technology
Lincoln Filene, president, Wm. Filene's Sons Company
Walter S. Gifford, president, American Telephone & Telegraph Company
Leroy A. Lincoln, president, Metropolitan Life Insurance Company
J. H. McGraw, Jr., president, McGraw-Hill Publishing Company
A. W. Robertson, chairman of board, Westinghouse Electric & Manufacturing Company
Alfred P. Sloan, Jr., chairman of board, General Motors Company
E. R. Stettinius, Jr., chairman of board, U. S. Steel Corporation
Walter C. Teagle, chairman of board, Standard Oil Company of New Jersey

Mr. duPont continues as a member of this ASA Advisory Committee.

Los Angeles Consumers Institute Promotes Interest in Standards

A permanent "Consumers Institute" is expected to develop from the consumers' committee of women who were invited by the May Company of Los Angeles last fall to advise store executives on standards, labeling, and other matters, according to *Business Week*, April 20. Activities of the committee were extended recently to include other Los Angeles stores, and the Los Angeles Better Business Bureau assumed supervision of its activities.

The committee is now working on a scheme for labeling furniture by a method similar to the Better Business Bureau's "Name-the-Wood" system under which the different woods are identified on exposed surfaces.

Objectives of the committee are to promote:

1. **Interest among consumers, distributors, manufacturers, and the public in the value and use of adequate standards for merchandise**
2. **Use of uniform terminology in describing goods and services**
3. **Informative labeling**
4. **Factual and truthful advertising**
5. **Correct use by customers of such privileges as charge accounts, delivery service, and returns**

Mrs. Charles E. Millikan is chairman of the committee, which includes six housewives and representatives of the California Federation of Women's Clubs, the Los Angeles Department of Education, Economics Association, and the Downtown Shopping News.

New NEMA Standard Covers Electrical Control Apparatus

A new Industrial Control Standard, just released by the National Electrical Manufacturers Association, contains general standards and definitions applying to resistors, contactors, brakes, auto-transformers and reactors, and a-c and d-c controllers; machine tool, synchronous motor, printing press, and mine hoist control; magnetic control for steel mill auxiliaries, overhead traveling and floor operated cranes; terminal markings; and guides to specifications for building equipment control apparatus.

The standard is available at $1.00 per copy from the National Electrical Manufacturers Association, 155 East 44th Street, New York.

Government Stamp Plan May Advance Textile Labeling

More effective labeling of textiles may be one unforeseen result of the extension this month of the Government Stamp Plan, originally applying only to surplus foods, to the buying of cotton goods, according to an article in *Business Week*, May 25. The new Cotton Stamp Plan, which was started in Memphis, Tennessee, May 7, rigidly limits the exchange of stamps to the purchase of commodities and products "made entirely of cotton that has been entirely grown, processed, and manufactured in the United States." The difficulty caused by this requirement has been due to the fact that cotton fabrics are frequently part rayon or contain other substitute materials which cannot be detected except by an expert.

As a result of the confusion already caused by this requirement, Memphis merchants are asking textile manufacturers to stamp their fabrics to show cotton content. The Federal Trade Commission has issued rules requiring fiber identification on labels, but thus far actual fiber identification "has been only moderately advanced" by the FTC rules, *Business Week* declares.

In the first week of operation (May 7-15), 4,200 relief clients in Memphis and Shelby county purchased $16,743 worth of green "cotton order" stamps and were given free a similar valuation in brown surplus stamps. The stamps were exchanged for work shirts, pillow cases and sheets, children's dresses, and clothes. The plan operates in much the same fashion as the Food Stamp Plan, which is now in effect in about 100 cities.

Revision of Paving Brick Recommendation Considered

A revision of the Simplified Practice Recommendation for Vitrified Paving Brick, R1, has been proposed by the Standing Committee of the industry, according to an announcement by the Division of Simplified Practice, National Bureau of Standards. The committee, at a meeting in Washington, D. C., for the 19th annual review of the Simplified Practice Recommendation, unanimously voted to propose the change to the industry.

The revision, if accepted, will add the 4 inch x 3½ inch x 8½ inch wire-cut lug brick to the list of recognized varieties because of its increased use in city street pavements in certain localities. While this brick increases the list of recognized varieties from four to five, the rising demand for it is offset by the rapidly declining use of the 2½ inch x 8½ inch vertical fiber brick. These five varieties satisfy 90.7 per cent of the total normal demand for vitrified paving brick.

W. H. Cullimore, Engineer-Secretary of the National Paving Brick Association, analyzed a detailed survey of shipments of brick made during the calendar year 1939, and it was this survey which was the basis for the action taken by the committee.

New York Safety Council Elects Coonley and Ainsworth

Howard Coonley, chairman of the board of the Walworth Company and past-president of the American Standards Association, was re-elected chairman of the executive committee by the Greater New York Safety Council at the Council's annual meeting May 16. Cyril Ainsworth, assistant secretary of the American Standards Association, who is in charge of the ASA safety program, was elected vice-president.

Frank L. Jones, vice-president of the Equitable Life Assurance Society, is the Council's president.

The Greater New York Safety Council is dedicated to the promotion of safety from accidents in New York City and its environs. It is affiliated with the National Safety Council, but is autonomous and supported locally by membership dues and contributions.

FHA Property Standards Guard Against Faulty Construction

The property standards and minimum construction requirements for new dwellings required by the Federal Housing Administration are the only safeguards against uncontrolled and reckless construction in the approximately 1,600 American cities and towns which do not have building codes, according to Howard P. Vermilya, director of the FHA's technical division.

Only about 1,500 of the 3,100 incorporated communities with populations of 2,500 or more have building codes, Mr. Vermilya explains.

In an effort to make its own requirements practical and effective, he declares, the FHA prepared its basic "property standards" and "minimum construction requirements for new dwellings" and then adapted these national requirements to local conditions and customs.

Mr. Vermilya is taking an active part in the program of the American Standards Association on building codes, and represents the Federal Housing Administration on the Building Code Correlating Committee.

New Foreign Standards Received by ASA Library

The following standards from foreign standardizing bodies are available for purchase or loan to members of the American Standards Association. The number of the standard as well as the title should be listed when standards are ordered.

Australia

Galvanized (Zinc-Coated) Barbed Wire (N.3 and 4-1940; and K.53, Part II-1935)

Canada

Construction and Test of Air-Cooled Transformers (Dry Type) (C22.2, No.47-1940)

Finland

Rigid couplings, General (B.VI.31) Mounted Half-Couplings, Junction Dimensions (B.VI.32) Forged on Coupling Flanges, Junction Dimensions (B.VI.33)
Rims, for private cars, Not exceeding 16 in. diameter (D.I.21) Not exceeding 17in. diameter (D.I.22)
Rims, flat base, for trucks and busses (D.I.23)
Rims, for motorcycles (D.I.24)
Low pressure tires for private cars, Not exceeding 16 in. diameter, width of tire (D.I.31)
Tires for trucks and busses, width of tire (D.I.32)
Low pressure tires for private cars, Not exceeding 16 in. diameter loading table, (D.I.36) Not exceeding 17 in. diameter loading table (D.I.37)
Low pressure tires for trucks and busses (D.I.38)
High pressure tires for trucks and busses (D.I.39)

France

Trous de passage des boulons (CNM 37)
Dessins Techniques pour industries mecaniques, electriques et connexes. Disposition des projections, echelles (CNM 41) Traits (CNM 42) Hachures (CNM 43) Indications de cotes (CNM 44) Signes de faconnage, surepaisseurs d'usinage, tolerances (CNM 45) Representation simplifiee des filetages (CNM 46) Representation des pieces de revolution (CNM 47)
Ecrous a embase. Diametres de 6 a 80 mm (CNM 85)
Arbres et moyeux canneles. Cotes nominales (CNM 147) Tolerances (CNM 148)
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The above standards are published in the language of the country from which they were received; however, in the case of the Japanese standards, English translations may be obtained from the American Standards Association.

Committees Reaffirm Simplified Practice Recommendations

The Division of Simplified Practice, National Bureau of Standards, announces that the following Simplified Practice Recommendations have again been reaffirmed without change by the Standing Committees of the respective industries:

Bedsteads, Springs, and Mattresses R2-32
Color for School Furniture R111-30

Printed copies of R2-32 are not available at present, but mimeographed copies may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C. Printed copies of R111-30 are obtainable at five cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C.

ASA Standards Activities

Standards Approved Since Publication of Our Last Issue

Specifications for Rubber-Insulated Tree Wire (Revision of C8.16-1936) American Standard C8.16-1940

Safety Rules for Radio Installations of the National Electrical Safety Code, Part 5 (Revision of Part 5, C2-1927) American Standard C2.5-1940

Methods of Testing Molded Materials Used for Electrical Insulation (Revision of C59.1-1938) American Standard C59.1-1940

Standards Now Being Considered by Standards Council for ASA Approval

Keyways for Holes in Gears B6.4

Standards for Felt

Approval Requirements for Hotel and Restaurant Deep Fat Fryers Z21.27

Approval Requirements for Hotel and Restaurant Ranges and Unit Broilers Z21.3

Requirements for Central Heating Gas Appliances (Revision to Z21.13-1938)

Twist Drills, Straight Shank, Proposed American Standard B5.12

Commercial Standard for Book Cloths, Buckrams, and Impregnated Fabrics for Bookbinding Purposes Except Library Bindings CS 57-36

Proposed American Recommended Practice for the Use of Explosives in Anthracite Mines M27

Commercial Standards for Sun Glass Lenses (CS 78-39; CS 79-39)

Specifications for Soft or Annealed Copper Wire (ASTM B3-39) H4.1

Specifications for Hard-Drawn Copper Wire (Revision of H14-1929; ASTM B1-39) H4.2

Specifications for Medium-Hard-Drawn Copper Wire (ASTM B2-39) H4.3

Tinned Soft or Annealed Copper Wire for Electrical Purposes (ASTM B 33-39) H4.4

Bronze Trolley Wire (ASTM B 9-39) H4.5

Copper Trolley Wire (ASTM B 47-39) H4.6

Hot-Rolled Copper Rods for Electrical Purposes (ASTM B49-39) H4.7

Methods of Testing and Tolerances for Tubular Sleeving and Braids (ASTM D 354-36) L13

Electric Fences of the National Electrical Safety Code, Part 6

Rules for Rounding Off Numerical Values Z25

New Projects Being Considered

Standardization of Identification Markings for Compressed Gas Cylinders

Safety Shoes

Standards Aid Production

These questions answered by the ASA Library

What are French Air Ministry Specifications for gasoline?
What is the British Standard for condensors for refrigerating machinery?
What is the melting point of cold cream?
Do you have the German, French and Italian specifications for wire and cable?
German and French steel standards—what are they?
What do the Symbols: VSM, DIN, AFNOR refer to?
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